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Echo-navigation to guide challenging transseptal puncture during transfemoral repair of mitral and tricuspid valve

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Fusion imaging gained increasing popularity in structural heart disease interventions. Currently, the combination of transesophageal echocardiography and fluoroscopy (EchoNavigator; Philips, Amsterdam, The Netherlands) is the unique modality which allows real-time fusion of enhanced quality. We illustrate the case of a 73-year-old female patient, admitted with mitral and tricuspid regurgitation and scheduled for transcatheter repair with

Fig. 1



(a) X-plane view of the residual atrial septal defect (grey circle). (b) correspondent echo/fluoro fusion overlay. (c) 3D echo reconstruction of the interatrial septum and localization of the defect. (d) final result with 4th Amplatzer positioned. (e) final fluoro result of the whole intervention.

MitraClip system (Abbott, Chicago, Illinois, USA). She previously underwent closure of cribrous atrial septum with Amplatzer Septal Occluder 26 mm (St. Jude Medical, Inc., Saint Paul, Minnesota, USA). One year later, residual shunt required two more Amplatzer, 8 and 10 mm (Fig. 1, panels a, c, d and asterisks). The preoperative echo-color Doppler revealed the residual flow shunt, located anteriorly on top of previous devices, potentially allowing the crossing with MitraClip system (Fig. 1, panels a and c). The advantage of using EchoNavigator was that by superimposing the echo image, the residual defect became visible on the fluoroscopic screen and the angulation of C-arm was then gradually adjusted to obtain the correct view. The defect was then marked in X-plane view at the ideal transseptal puncture site. This marker was automatically displayed on the fluoroscopy image (Fig. 1, panels a–c, arrows) and the crossing in the left atrium was performed uneventfully, under fusion imaging guidance (Fig. 1, panel c). The mitral and tricuspid valves were repaired by clipping. The procedure concluded with implantation of a fourth

35-mm Amplatzer (Fig. 1, panels d and e), in absence of clinically relevant residual shunt, as assessed with angiography and blood samples. The complementary use of EchoNavigator may help to overcome the intrinsic imaging limitations of the interatrial septum, whereas the fiducial markers increase tremendously the chance of procedural success.^{1–3}

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Conflicts of interest

There are no conflicts of interest.

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